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of the insulator, high contrast inspection testing by laser-induced
photoelectron emission can be expected. ***** SEE ORIGINAL DOCUMENT
*****

The band alignments for such an ideal situation in the
insulating material of the package is depicted in Fig. 1(a).
With a
perfect host material, the Fermi level EF would be at the middle of
the energy gap EG which separates the valence band maximum Eval and
the conduction band minimum Econd . The level for vacuum emission is
the vacuum level Evac, which is normally just above Econd . Since
the material is assumed ideal, there are no electronic states in the
energy gap, so the highest energy occupied electron states lie at
Eval, and the minimum energy required to raise electrons above Evac
is the photoelectric threshold Ephoto = Evac - Eval . If any low
concentration of electrons were available within the band gap,
electron emission would be possible at threshold excitation energies
starting at Ethermal = Evac - EF, because the highest such occupied
electron states in the gap would be at EF .
-         There are two contrasting situations which limit this approach:
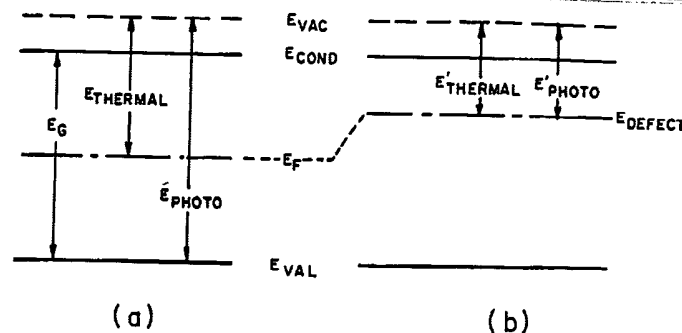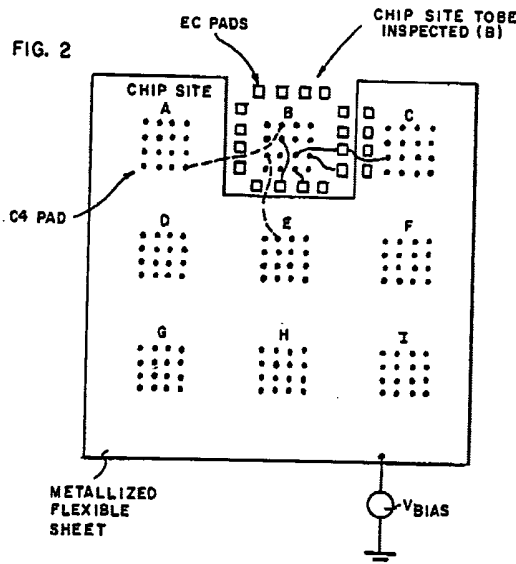non-ideal band alignments due to defect states and ideal

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FIG. 1

FIG. 2

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